

# Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA)

## PRIORITIZATION METHODS

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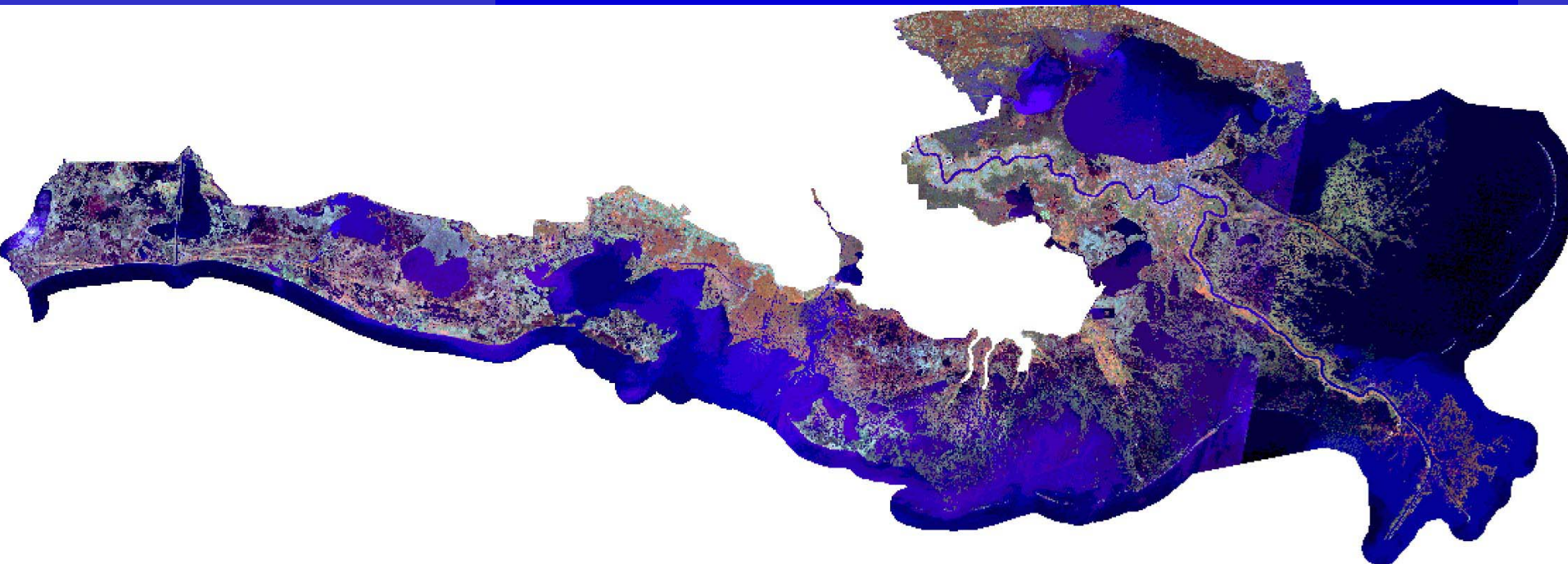
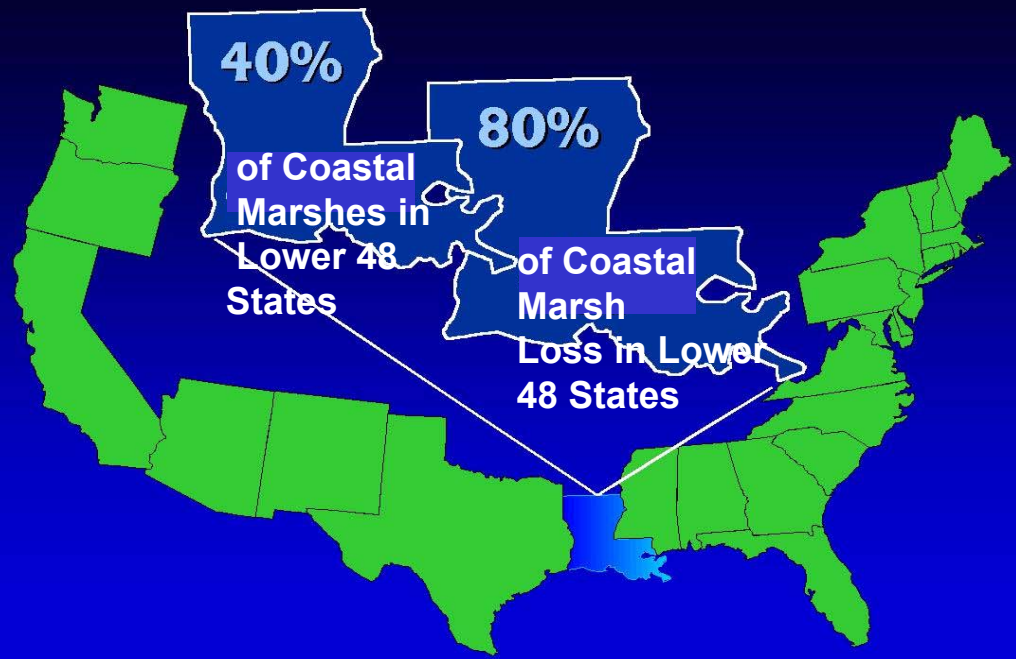


# PRESENTATION OUTLINE



1. Brief Overview of the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Program
2. Prioritization Methods
  - A. Wetland Valuation Assessment (WVA)
  - B. Prioritization Ranking Score

# I. Overview of CWPPRA Program



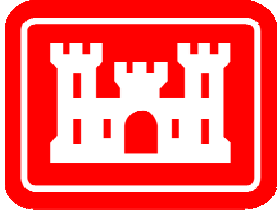


# I. Overview of CWPPRA Program

- Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) was authorized under PL 101-646, Title III in November 1990 (10 year authority)
- Two additional authorizations extend the Act through 2009
- Funding is from Department of Interior's Sport Fish Restoration Trust Fund
- Funding averages \$50M/year
- Current authorization totals \$1.0B over period 1990-2009
- Goal/objective of the program is to create, protect, or restore Louisiana's coastal wetlands
- Project cost sharing is 85% Federal/15% non-Federal
- Projects request funds in 2 phases (Ph I - design, Ph 2 - construction)



# CWPPRA is a Multi-Agency Effort



**USACE:** Department of Army -  
U.S. Army Corps of Engineers

**NRCS:** Department of Agriculture  
- Natural Resources  
Conservation Service



Natural Resources  
Conservation Service



**NMFS:** Department of Commerce  
- National Marine Fisheries  
Service



**USFWS:** Department of the  
Interior - U.S. Fish and Wildlife  
Service

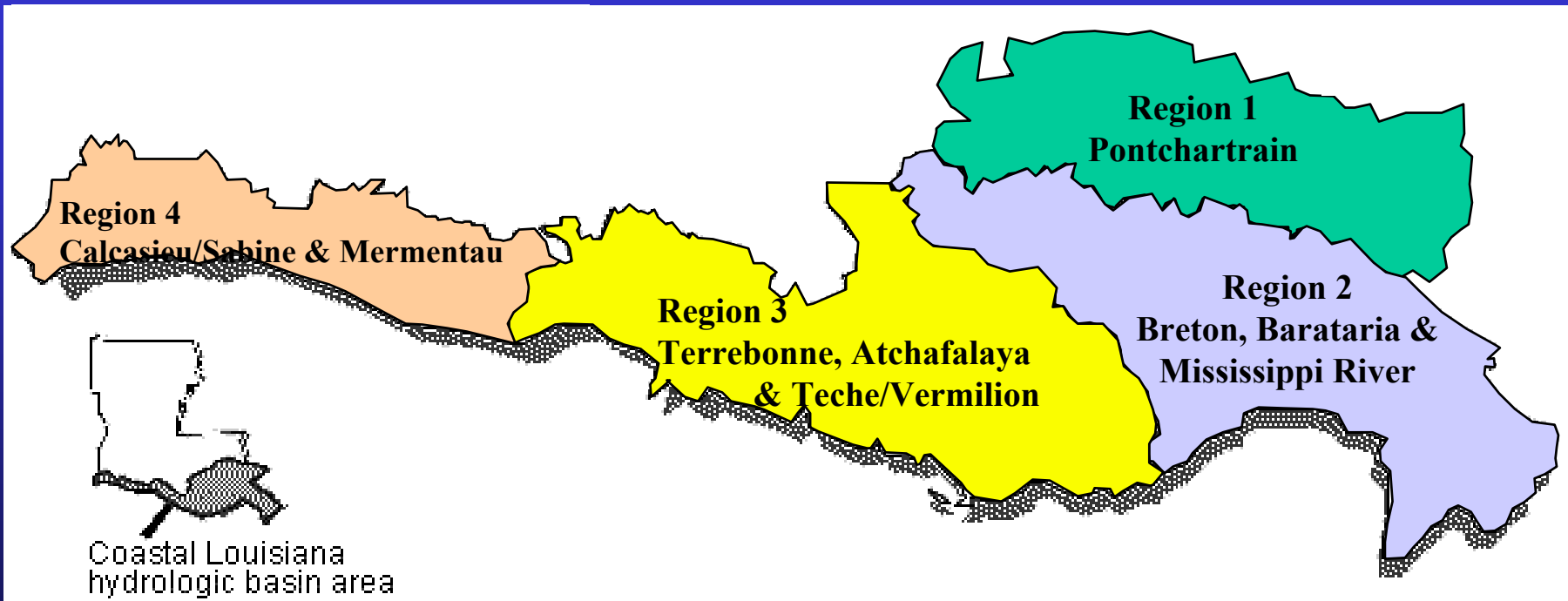
**USEPA:** Environmental  
Protection Agency

**State of Louisiana** - Office of the  
Governor



# I. Overview of CWPPRA Program

- \$5M in Federal funds are set aside each year to plan an annual “Priority Project List (PPL)”
- Yearly PPL cycle allows agency/parish/public input to identify and develop projects under the program
- Projects are selected for Phase I (design) funding at the end of the yearly PPL process



# I. Overview of CWPPRA Program



- All 5 Federal agencies sponsor projects under the program
- Corps is lead agency, serving as “banker” for the program
- Program Status: 127 active projects on 13 Priority Project Lists (PPLs):
  - 61 projects completed construction
  - 12 projects under construction
  - 7 additional project scheduled for construction in FY04
  - 47 projects scheduled for construction in FY05 and later
- Projects restore, create, or protect 116,751 acres of coastal wetlands (PPLs 1-13)
- Total cost of all projects on PPLs 1-13 is \$1.7B

# 2. CWPPRA Prioritization Methods



The CWPPRA program uses two prioritization methods:

## A. Wetland Valuation Assessment (WVA)

- Used in PPL planning (Phase I - design)
- Community-level habitat model
- Primary output is Average Annual Habitat Units (AAHUs)

## B. Prioritization Ranking Score

- Used in selecting projects for Phase II (construction)
- Developed as a “tool” to aid in selecting projects for construction approval in the funding-limited program
- Primary output is a weighted score (numeric)

\* Important to note that projects are prioritized based upon consensus of the 6 CWPPRA agencies (Fed/non-Fed)



# 2A. Wetland Value Assessment (WVA) Methodology

A Community-Level Approach to Habitat  
Assessment

# Community-Level Habitat Models

## Wetland Value Assessment

- Fresh/intermediate Marsh
- Brackish Marsh
- Saline Marsh
- Barrier Island/Headland
- Coastal Chenier/Ridge
- Swamp



# Primary Model Assumptions

- We can characterize optimal fish and wildlife habitat within a given wetland type
- We can compare existing and future habitat conditions to that optimum to provide a **Quality** Index

# Development Constraints

Models had to:

- Be broad based (not just for fish or waterfowl habitat)
- Emphasize wetland **vegetation**
- Be easily applied using existing or readily obtainable data



# Model Components

- Habitat variables
- Suitability Index graphs
- Habitat Suitability Index formula

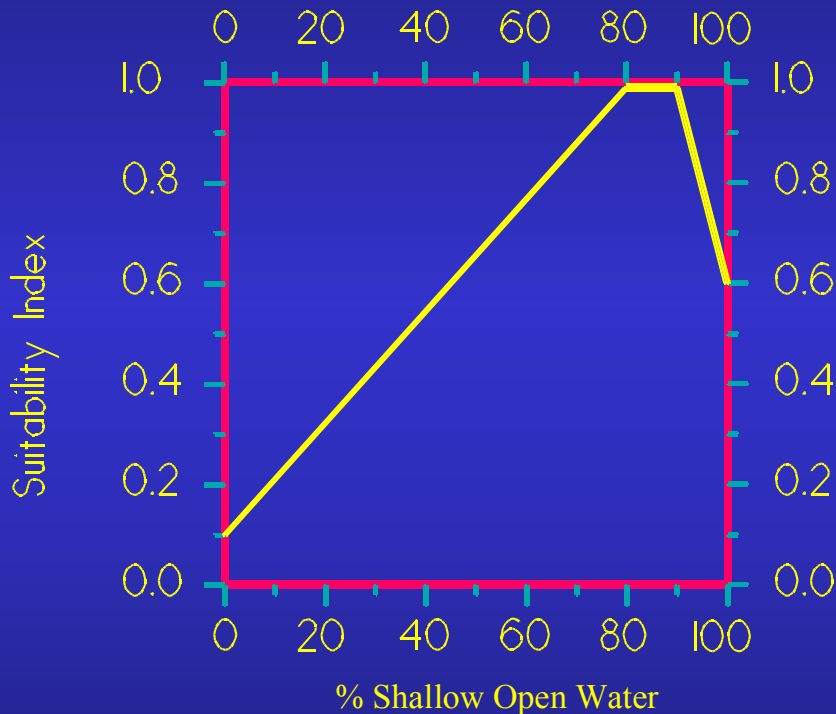


# Habitat Variables for Marsh Models

- V1 - Emergent vegetation
- V2 - Submerged aquatic vegetation
- V3 - Marsh edge and interspersions
- V4 - Water depth
- V5 - Salinity
- V6 - Estuarine organism access



# Suitability Index Graph



- Graphs define how habitat quality relates to variable values
- Yield is a numeric value: Suitability Index (SI)

# Habitat Suitability Index Formula

$$\text{Open Water HSI} = \frac{\left( 3.5 \times (SIV_2^3 \times SIV_6^1)^{(1/4)} \right) + \left( \frac{(SIV_3 + SIV_4 + SIV_5)}{3} \right)}{4.5}$$

$$\text{Emergent Marsh HSI} = \frac{\left( 3.5 \times (SIV_1^5 \times SIV_6^1)^{(1/6)} \right) + \left( \frac{(SIV_3 + SIV_5)}{2} \right)}{4.5}$$

- Unique to each model
- Combines Suitability Indices into a Habitat Suitability Index (HSI)
- HSI represents composite habitat quality value

# Habitat Unit

Numerical combination of habitat quantity (Acres) and habitat quality (Habitat Suitability Index - HSI)

<u>Acres</u>		<u>Hab. Suit. Index</u>		<u>Hab. Units</u>
500	x	0.8	=	400

# Benefit Assessment

- Calculate Baseline HSI and HUs
- Develop future with-project and future without-project scenarios
- Calculate HSI and HUs for future years under each scenario
- Calculate Average Annual Habitat Units for each scenario
- Determine net benefit



# Net Benefit

Future with-project AAHUs

– Future without-project AAHUs

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**= NET BENEFITS (+/- AAHUs)**

# WVA Strengths

- Community Based Models vs single-species based
- Can evolve with input of new information
- Easy to apply and understand
- Based on data collection & science from expert panel
- Public can relate to the concept of assessing fish and wildlife habitat value based on community models
- Allows comparisons between projects – common currency



## 2B. Prioritization Ranking Score

- Developed as a “tool” to prioritize projects currently under Phase I (design) for use in the selection of projects for Phase II (construction) funding
- Consists of 8 criterion
- Results in a point score (max 100)

# Criterion 1: Cost-Effectiveness

- Scoring is based on current estimate of fully funded project cost and net acres created/protected/restored at Target Year 20
- Exception is swamps, which will be assigned a point score independently
- Point scores are assigned based upon the cost per net acre:

– Less than \$20,000/net acre	10 points
– Between \$20,000 and \$40,000/net acre	7.5 points
– Between \$40,000 and \$60,000/net acre	5 points
– Between \$60,000 and \$80,000/net acre	2.5 points
– More than \$80,000/net acre	1 point

## Criterion 2: Addresses Area of Need/High Loss

Scoring is highest for basins undergoing the greatest loss and for areas of highest internal loss rates/average erosion rates

For non-shoreline protection projects:

Basin	High ( $\geq 2.0\%/yr$ )	Med ( $>2\%$ to $\leq 0.5\%/yr$ )	Low ( $<0.5\%$ to $\leq 0.01\%/yr$ )	Stable or Gain
Barataria, Terrebonne	10	7	5	3
Calc/Sabine, Mermentau, Pont	7	5	3	2
Breton, Mississippi River	5	3	2	1
Atchafalaya, Teche Vermilion	3	2	1	0

For shoreline protection projects and barrier island projects:

Basin	High ( $\geq 25$ ft/yr)	Med ( $\geq 10\%$ to $<25$ ft/yr)	Low (0 to $<10$ ft/yr)
Barataria, Terrebonne	10	7.5	5
Calc/Sabine, Mermentau, Pont	7.5	5	4
Breton, Mississippi River	5	4	3
Atchafalaya, Teche Vermilion	4	3	1



## Criterion 3: Implementability

- Scoring is based upon the likelihood of serious impediments precluding timely implementation
- Projects with no impediments are given a score of 10
- 3 points are subtracted for each identified implementability issue, negative scores are possible (10, 7, 4, 1, -2)
- Implementability issues include:
  - Oysters (oysters in project area without a state oyster program in place)
  - Land rights (identification of non-participating landowners)
  - Infrastructure relocations (funding not included in project costs)
  - Major concerns (large-scale flooding increases, significant navigation impacts, basin-wide ecological changes)

# Criterion 4: Certainty of Benefits

- Scoring is higher for types of projects that are more effective in producing anticipated benefits, and is based upon project type (from Adaptive Management review)
- Project type table follows:

Inland shoreline protection – chenier plain	10 pts
River diversions – deltaic plain	9 pts
Terracing – chenier plain	8 pts
Inland shoreline protection – deltaic plain	8 pts
Marsh creation – chenier plain	7 pts
Marsh creation – deltaic plain	7 pts
Barrier island projects	7 pts
Gulf shoreline protection – chenier plain *	6 pts
Gulf shoreline protection – delatic plain *	5 pts
Freshwater diversion – chenier plain	5 pts
Hydrologic restoration – chenier plain	5 pts
Terracing – deltaic plain	3 pts
Hydrologic restoration – deltaic plain	2 pts

\* Gulf shoreline protection means typical structures currently being used, not experimental

## Criterion 5: Sustainability of Benefits

- Scoring is based projecting the net acres benefited at Target Year (TY) 20 through TY30, based upon application of future without project conditions (FWOP)
- In general, it is assumed (after 20 years) that project features, such as water control structures, would be locked open, controlled diversions and siphons would be closed, and shoreline protection structures will only provide full protection until next maintenance event

% decr in net acres between TY20 and TY30	Score
0 – 5% (or gain)	10
6 – 10%	8
11 – 15%	6
16 – 20%	4
21 – 30%	2
> 30%	1

# **Criterion 6: Increase Riverine Input (Deltaic Plain)/ Freshwater Input and Saltwater Penetration Limiting (Chenier Plain)**

## **Deltaic Plain Projects:**

- Significantly increase riverine input ( $\geq 2,500$  cfs) 10 pts
- Riverine input between 2,500 and 1,000 cfs 7 pts
- Minor increases of riverine flows ( $< 1,000$  cfs) 4 pts
- Not result in increases in riverine flows 0 pts

## **Chenier Plain Projects:**

- Divert freshwater from an area where excess water adversely impacts wetland health to an area which would benefit from freshwater inputs OR project will provide a significant level of salinity control 10 pts
- Increases in freshwater inflow to an area where it is in need OR The projects may provide some minor and/or local salinity control 5 pts
- No affect on freshwater inflow or salinity 0 pts

# Criterion 7: Increases Sediment Input

- Scoring is higher for project that bring in sediment from exterior sources (Atchafalaya River north of delta, Mississippi River, Ship Shoal, other)
- Criterion is scored as shown:
  - Project will result in significant placement of sediment from external sources 10 pts
  - Project will input some sediment from external sources 5 pts
  - Project will not increase sediment input over presently occurring 0 pts



## Criterion 8: Maintain/Establish Critical Landscape Features

- Scoring is highest for projects with landscape features that provide critical benefits to maintain the integrity of a basin's ecosystem
- Criterion is scored as shown:
  - Project serves to protect features which are critical to maintaining the integrity of the basin (20-year life) 10 pts
  - Project serves to protect landscape features which are critical to the mapping unit (20-year life) 5 pts
  - Project does not meet above criteria 0 pts

## Total Prioritization Score

- Each score is weighted using the percentages shown. A maximum of 100 points is possible.
  - 20% Cost-effectiveness
  - 15% Addresses area of need/high loss
  - 15% Implementability
  - 10% Certainty of benefits
  - 10% Sustainability of benefits
  - 10% Increases riverine input/freshwater input and saltwater penetration limiting
  - 10% Increases sediment input
  - 10% Maintains or establishes critical landscape features
- A total point score is determined for each project being ranked

# Prioritization Table

## CWPPRA, Prioritization Scores

Dated: December 9, 2003

Project Name	Project Number	Region	PPL	Lead Agency	Project Type	(2) Total Acres Benefited	(1) Current Estimate	Cost Per Acre (\$/acre)	Prioritization Scores for each Criteria & Corresponding Weight								Total Weighted Score 100%	Anticipated Date of Request For Construction Approval	Scheduled Construction Start
									Cost Effective 20%	Area of Need 15%	Implementability 15%	Certainty of Benefits 10%	Sustainability 10%	HGM Riverine Input 10%	HGM Sediment Input 10%	HGM Structure and Function 10%			
Benney's Bay Sediment Diversion	MR-13	2	10	COE	RD	5,706	\$39,295,672	\$6,887	10	5	10	9	10	10	10	10	91.50	Apr-05	Sep-05
Delta-Building Diversion North of Fort St. Philip	BS-10	2	10	COE	RD	692	\$6,032,535	\$8,718	10	4.4	10	9	10	10	10	5	85.60	Aug-04	Sep-04
South Lake DeCade Freshwater Introduction - CU #1	TE-39	3	9	NRCS	SP	207	\$3,534,014	\$17,073	10	9.3	10	6.5	8	0	0	10	73.45	Apr-04	Oct-04
Small Freshwater Diversion to the NW Barataria Basin	BA-34	2	10	EPA	RD	941	\$13,412,574	\$14,254	10	7.5	10	9	8	4	5	0	72.25	Jan-07	Jul-07
Barataria Landbridge Phase 3 - CU 5	BA-27c	2	9	NRCS	SP	901	\$19,398,738	\$21,530	7.5	7.6	10	8	10	0	0	10	69.40	Apr-04	Oct-04
South White Lake Shore Protection	ME-22	4	12	COE	SP	702	\$24,963,739	\$35,561	7.5	6	10	10	8	0	0	10	67.00	Aug-04	Oct-04
Grand Lake Shoreline Protection	ME-21	4	11	COE	SP	495	\$13,482,907	\$27,238	0	7.5	10	10	8	0	0	5	64.25	Apr-04	Jul-04
Opportunistic Use of Bonnet Carré Spillway	PO-26	1	9	COE	RD	177	\$187,700	\$1,060	10	4	10	9	10	4	0	0	64.00	Apr-04	Apr-04
Penchant	TE-34	3	6	NRCS	HR	1,155	\$13,250,937	\$11,473	10	5.9	10	2	10	7	0	0	62.85	Oct-05	Feb-06
River Reintroduction into Maurepas Swamp	PO-29	1	11	EPA	RD	5,438	\$56,664,944	\$10,420	10	5	4	9	8	7	5	0	62.50	Oct-05	Jan-06
East/West Grand Terre Islands Restoration	BA-30	2	9	NMFS	BI	403	\$18,049,794	\$44,789	5	8.9	10	7	1	0	5	10	61.35	Aug-04	Apr-05
Dedicated Dredging on the Barataria Basin Landbridge	BA-36	2	11	FWS	MC	564	\$29,527,587	\$52,354	5	10	10	7	4	0	0	0	61.00	Apr-04	Aug-04
Avoca Island Diversion & Land Building	TE-49	3	12	COE	RD	143	\$18,868,887	\$131,950	1	8	10	9	6	7	10	0	61.00	Aug-04	Dec-04
Barataria Barrier Island Complex Project	BA-38	2	11	NMFS	BI	534	\$61,995,587	\$116,097	1	10	10	7	1	0	10	10	60.00	Dec-03	Apr-04
Freshwater Introduction South of Highway 82	ME-16	4	9	FWS	FD	296	\$4,967,680	\$16,783	10	4.1	10	5.2	10	3	0	0	59.35	Apr-04	Jun-04
North Lake Merchant - CU 2	TE-44	3	10	FWS	MC	553	\$22,695,218	\$41,040	5	7.4	10	6	6	0	0	10	58.10	Aug-04	Jan-05
Sabine Refuge Marsh Creation - Cycle 3	CS-28	4	8	COE	MC	187	\$3,504,333	\$18,740	10	5	10	7	8	0	0	0	57.50	Jan-04	May-06
Sabine Refuge Marsh Creation - Cycle 5	CS-28	4	8	COE	MC	168	\$2,133,439	\$12,699	10	5	10	7	8	0	0	0	57.50	Jan-04	May-08
Ship Shoal: Whiskey Island West Flank Restoration	TE-47	3	11	EPA	BI	182	\$39,130,968	\$215,005	1	6.3	10	7	4	0	10	10	57.45	Aug-04	Apr-05
Raccoon Island Breakwaters - Ph 2	TE-48	3	11	NRCS	BI	167	\$11,174,894	\$66,916	2.5	7.1	10	5.8	4	0	5	10	55.45	Apr-04	Oct-04
Pass Chaland to Grand Bayou Pass	BA-35	2	11	NMFS	BI	161	\$18,836,197	\$116,995	1	10	10	7	1	0	5	10	55.00	Aug-04	Mar-05
Sabine Refuge Marsh Creation - Cycle 2	CS-28	4	8	COE	MC	261	\$8,808,217	\$33,748	7.5	4.5	10	7	8	3	0	0	54.75	Jan-04	May-05
Brown Lake	CS-09a	4	2	NRCS	HR	282	\$3,154,472	\$11,186	10	5	7	5.1	8	3	0	0	54.10	Oct-04	Jan-05
Sabine Refuge Marsh Creation - Cycle 4	CS-28	4	8	COE	MC	163	\$3,630,831	\$22,275	7.5	5	10	7	8	0	0	0	52.50	Jan-04	May-07
Barataria Basin Landbridge Shoreline Protection - Ph 4	BA-27d	2	11	NRCS	SP	334	\$28,783,642	\$86,179	1	7.6	10	8	6	0	0	10	52.40	Jan-04	Aug-04
Mississippi River Sediment Trap	MR-12	2	11	COE	MC	1,190	\$52,187,237	\$43,855	5	5	10	7	2	0	10	0	51.50	Aug-04	Sep-04
South Grand Cheniere Hydrologic Restoration	ME-20	4	11	FWS	HR	440	\$20,009,421	\$45,476	5	5	10	6.7	8	3	0	0	50.20	Aug-04	May-05
Castille Pass Sediment Delivery	AT-04	3	9	NMFS	RD	589	\$30,785,604	\$52,268	5	0	7	7.7	10	7	0	5	50.20	Apr-04	May-04
South Lake DeCade Freshwater Introduction - CU #2	TE-39	3	9	NRCS	FD	40	\$1,532,400	\$38,310	7.5	5	7	5	10	2	0	0	50.00	unscheduled	unscheduled
Lake Boudreaux	TE-32a	3	6	FWS	FD	603	\$14,450,063	\$23,964	7.5	7.5	7	5	6	2	0	0	49.75	Apr-04	Jan-05
Bayou Dupont Sediment Delivery System	BA-39	2	12	EPA	MC	400	\$24,399,401	\$60,999	2.5	10	7	7	2	0	10	0	49.50	Jan-05	Jan-05
Rockefeller Refuge Gulf Shoreline Stabilization	ME-18	4	10	NMFS	SP	920	\$49,858,119	\$54,194	5	7.5	10	6	2	0	0	5	49.25	Apr-04	May-04
West Lake Boudreaux Shoreline Protection & MC	TE-46	3	11	FWS	SP	145	\$14,394,012	\$99,269	1	9.2	10	7.6	4	0	0	5	47.40	Aug-04	Jan-05
GIWW Bank Restoration of Critical Areas in Terrebonne	TE-43	3	10	NRCS	SP	366	\$28,944,616	\$79,084	2.5	7.5	10	8	8	0	0	0	47.25	Apr-04	Oct-04
Little Pecan Bayou Control Structure	ME-17	4	9	NRCS	HR	144	\$14,285,943	\$99,208	1	4	10	6	10	6	0	0	45.00	Aug-06	Feb-07
Lake Borgne and MRGO Shore Protection	PO-32	1	12	COE	SP	266	\$24,984,362	\$93,926	1	4.7	10	8	6	0	0	5	43.05	Aug-04	Dec-04
East Timbalier Island Restoration - Phase 2	TE-30	3	4	NMFS	BI	23	\$16,902,400	\$734,887	1	8.9	7	6	1	0	0	10	42.85	unscheduled	unscheduled
Lake Borgne Shoreline Protection	PO-30	1	10	EPA	SP	167	\$21,033,365	\$125,948	1	5	10	8	4	0	0	5	41.50	Aug-04	Sep-04
Grand Bayou	TE-10	3	5	FWS	HR	199	\$8,209,722	\$41,255	5	5.4	7	2	8	2	0	0	40.60	Jan-05	Mar-06
Freshwater Bayou Canal HR/SP - Belle Isle to Lock	TV-11b	3	9	COE	SP	241	\$24,181,413	\$100,338	1	3	10	10	6	0	0	0	37.50	Apr-04	Jun-04
Weeks Bay/Commercial Canal/GIWW SP	TV-19	3	9	COE	SP	278	\$30,779,300	\$110,717	1	4	4	7.2	4	0	0	5	30.20	Aug-04	Mar-05

### Notes:

- Current estimate reflects fully-funded estimate for engineering and design, lands, project administration, construction, construction S&I, contingency, 20 years of O&M and 20 years of only project specific monitoring if applicable. Monitoring monies going to CRMS have been removed from the fully-funded estimate. This estimate is the baseline (at the 100% level) estimate.
- Total acres reflect total acres benefited at end of 20 year project.
- Bayou Lafourche was not prioritized because there is currently no construction estimate available.
- Delta Building Diversion at Myrtle Grove (PPL 10) is not included because Phase II will not be funded under CWPPRA.
- Complex projects not yet approved for Phase I were not prioritized.
- West Point at la Hache Outfall Management Project (BA 04c) was not prioritized because the project features are not known and project costs and benefits can, therefore, not be determined to apply criteria.
- When project scores were tied an additional sort by the score of the cost effectiveness criterion was run. When those were tied another sort was run based on the sum of the area of need and implementability criteria scores.

# Summary

- CWPPRA program goal is to create, protect or restore Louisiana wetlands
- CWPPRA projects are prioritized in the *planning* stage:
  - using WVA method
  - Community-level habitat model
  - Output is AAHUs
  - Allows comparison of restoration projects in planning stage
- CWPPRA projects are prioritized in the *design* stage :
  - WVA evaluation is updated during design stage
  - In addition, all projects are ranked based upon prioritization score (assigned point score)
  - Allows comparison of projects ready for construction
- Both prioritization methods are used in the selection of projects under the program



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## QUESTIONS?

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